

**COLORADO RIVER RECOVERY PROGRAM
FY-2004/2005 PROPOSED SCOPE-OF-WORK**

C-7

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<u>Category</u>	<u>Expected Funding Source</u>
<u>XX</u> Ongoing project	Annual funds
Ongoing-Revised	<u>XX</u> Capital funds
Requested new start	Other
Unsolicited Project	

I. Title of Proposal: **Propagation Facilities and Equipment.**

II. Relationship to Recovery Program/Ranking Factors:

General Recovery Program Support Action Plan

- IV. Manage genetic integrity and augment or restore populations (stocking endangered fishes)
 - IV.A.4. Secure and manage the following presumptive genetic stocks in refugia
 - IV.A.4.a. Razorback Sucker
 - IV.A.4.a.(1) Middle Green River
 - IV.A.4.a.(2) Upper Colorado River
 - IV.A.4.b. Bonytail
 - IV.A.4.c. Humpback Chub
 - IV.A.4.c.(1) Black Rocks Canyon
 - IV.A.4.c.(2) Westwater Canyon
 - IV.A.4.d. Colorado Squawfish
 - IV.A.4.d.(1) Upper Colorado River
 - IV.B. Conduct annual fish propagation activities.
 - IV.B.1. Identify feed needs for genetic stock refugia, research, augmentation, and information and education.
 - IV.B.2. Produce an Annual Propagation Operation Plan.
 - IV.E. Plan, design, and construct needed facilities.
 - IV.E.2.b. Wahweap

Green River Action Plan: Mainstem

- IV.A. Augment or restore populations as needed, and as guided by the Genetics Management Plan
 - IV.A.1. Develop augmentation plan for the four endangered fishes in the Green River
 - IV.A.1.c. Implement plan

Green River Action Plan: Yampa and Little Snake rivers

- IV.A. Yampa River in Dinosaur National Monument
 - IV.A.1. Augment or restore populations as needed, and as guided by the Genetics Management Plan
 - IV.A.1.a. Develop stocking plan for bonytail in the Yampa River
 - IV.A.1.a.(1) Implement stocking plan

Colorado River Action Plan: Mainstem

- IV.A. Augment or restore populations as needed, and as guided by the Genetics Management Plan
- IV.A.2. Monitor the fish community in the upper Colorado River (above Palisade) and develop management action plan, including recommendations for Colorado pikeminnow and razorback sucker augmentation
 - IV.A.2.a. Develop augmentation plan for razorbacks in the Colorado River in Colorado
 - IV.A.2.a.(2) Implement razorback sucker augmentation plan
 - IV.A.2.b. Develop augmentation plan for pikeminnow in the Colorado River in Colorado
 - IV.A.2.b.(2) Implement Colorado pikeminnow augmentation plan
 - IV.A.2.c. Develop augmentation plan for bonytail in the Colorado River from Palisade to Loma
 - IV.A.2.c.(2) Implement bonytail augmentation plan
- IV.A.3. Develop augmentation plan for the four endangered fishes in the Colorado River in Utah
 - IV.A.3.c. Implement Colorado pikeminnow augmentation plan

Colorado River Action Plan: Gunnison River

- IV.A. Augment or restore populations as needed, and as guided by the Genetics Management Plan
- IV.A.1. Razorback sucker
 - IV.A.1.c. Implement Colorado's stocking plan for razorback sucker
- IV.A.2. Colorado pikeminnow
 - IV.A.2.a. Implement Colorado's stocking plan

III. Background/Rationale and Hypotheses

An Element of the Recovery Program

One of five elements in the Recovery Program for Endangered Fishes in the Upper Colorado River Basin is "native fish stocking" (U.S. Fish and Wildlife Service 1987). The goal of this element is to produce sufficient captive-reared endangered fishes for broodstocks with genetic diversity similar to the wild stock used as founders (Williamson and Wydoski 1994) and produce fish to meet the state stocking plans (Hudson 2001; Nesler 2001; Nesler et al. 2003).

Captive propagation is an important part of recovery efforts for endangered fish and wildlife because it provides animals for maintaining gene pools in refuges, research and development, information and education, and stocking. The Biology Committee recognizes that stocking is an important fishery management tool that has a definite and useful function. However, this tool is not a substitute for removing or significantly reducing factors that are limiting natural recruitment of the endangered fishes.

Recovery Program Philosophy and Goals Regarding Genetics Management

The Recovery Program's philosophy is to maintain the genetic integrity of wild and captive-reared endangered fishes in the Upper Colorado River Basin to prevent irreversible losses of genetic diversity that may result from management interventions or lack of action.

The Recovery Program's genetics management objectives are:

1. To prevent immediate extinction of any endangered Colorado River fish stocks.
2. To conserve genetic diversity of wild endangered fish stocks through recovery efforts that will protect or restore viable wild stocks by removing or significantly reducing limiting factors that caused population declines.
3. To maintain genetic diversity in captive-reared endangered fish broodstocks that is similar to the wild stock used as founders.

Production

State stocking plans (Hudson 2001; Nesler 2001) were recently revised (Nesler et al. 2003). These plans request the production of fewer yet larger razorback sucker, bonytail, and Colorado pikeminnow. The Annual Operation Plan (Czapla 2003) outlines how production will proceed over the upcoming year to meet the requested numbers and size of fish in the stocking plan.

All fish to be stocked require the implantation of a passive integrated transponder (PIT) tag to distinguish stocked fish from wild fish. With an annual production of 29,790 razorback sucker, 15,990 bonytail, and 2,250 Colorado pikeminnow, 48,030 PIT-tags are required each year.

IV. Goals, Objectives, End Product:

Goal: To construct propagation facilities to serve as primary and backup refuges and as production facilities for stocking PIT-tagged endangered fishes for the Recovery Program in the Upper Colorado River Basin.

Objectives:

1. To select suitable sites as propagation facilities for genetic refuges, broodstock development, and production for restoration stocking in the Upper Colorado River Basin.
2. To plan, design, and construct propagation facilities for captive-rearing of endangered fishes for the Upper Colorado River Basin.
3. To conduct stocking of tagged razorback sucker, bonytail, and Colorado pikeminnow in the Upper Colorado River Basin

End Products:

Propagation Facilities: Primary refuges, backup refuges, and production facilities.

Captive-Reared Endangered Fish: Broodstock development, refuge to prevent catastrophic loss (i.e., extinction of specific stocks), and fish for augmentation.

Production: Stocking of the tagged numbers and sizes of fish required in the stocking plan.

V. Description of past performance on this or similar projects:

The use of propagation facilities in the Recovery Program initially was designed as primary/ backup refuges and producing small numbers of fish for research and experimental stockings. In the late 1990's, their use was expanded to producing large numbers of relatively small fish for state stocking plans. To produce those kinds of numbers, facilities were expanded to include hundreds of acres of grow out ponds. Recently the state stocking plans were revised to request fewer fish at larger sizes. All fish to be stocked require a PIT tag.

VI. Study area:

Ouray National Fish Hatchery, Ouray, Utah
Grand Valley Endangered Fish Facility, Grand Junction, Colorado
Wahweap State Fish Hatchery, Page, Arizona
Mumma Native Aquatic Species Restoration Facility, Alamosa, Colorado

VII. Methods/Approach:

The needs for captive propagation facilities for endangered fish include two primary refuges, one backup refuge, and production facilities. Although the Recovery Program bottleneck is the lack of recruitment due to high mortality in the early life stages of the endangered fishes, stocking is the fishery management tool to build up the number of adult endangered fish so that natural spawning will be able to sustain the populations when other Recovery Program elements are implemented. An integrated stocking plan identifies the number, sizes and river reaches to be stocked (Nesler et al. 2003).

Primary Refuges. Primary refuges are intended for developing and maintaining broodstocks and for production. Two primary refuges are needed for razorback sucker broodstock development: one for the Green River and one for the Upper Colorado River. The Ouray National Fish Hatchery is fully operational to meet the captive-reared endangered fish as a primary refuge and is considered the primary refuge for the Green River. The Grand Valley Endangered Fish Facility has been designated as the primary refuge for endangered razorback sucker stocks from the Upper Colorado River.

Backup Refuges. The main purpose of backup refuges is to maintain priority endangered fishes to prevent catastrophic loss of an Upper Basin stock or to maintain broodstocks. Endangered fish that are maintained in backup refuges would not be handled very often. Although there is consensus that priority captive-reared fish should be maintained in backup refuges as a safety precaution against catastrophic loss, a backup refuge could be simply a pond with a reliable water supply in a secure area. The backup refuge for Green River stocks and upper Colorado River stocks will be Wahweap State Fish Hatchery UT. Wahweap utilizes golf course ponds at Glen Canyon National Recreational Area for backup and educational purposes.

Growout or Production Ponds. The Recovery Program participants have established a high priority for stabilizing the razorback sucker stock in the Middle Green River and for reintroduction of the razorback sucker in the Upper Colorado River. The excellent growth exhibited by this species in predatory-free off-channel impoundments along Lake Mohave (T. Burke and G. Mueller, 1995, Personal Communication), Wahweap State Fish Hatchery (L. Lentsch, 1995, Personal Communication), and gravel-pit ponds along the Colorado River in the Grand Valley (Osmundson and Kaeding 1989) demonstrates that elaborate propagation facilities are not required to produce fish for reintroduction stocking in the Upper Colorado River Basin. The Recovery Program leases many ponds from local private individuals to achieve the growth necessary to meet the stocking plan.

VIII. Task Description and Schedule:

Fiscal Year 2004

Task 1 - Bureau of Reclamation

Purchase PIT tags and associated equipment (i.e., needles, syringes, readers) for fish to be stocked. Bureau of Reclamation makes the purchase and has them delivered to Grand Junction for record keeping and distribution.

Task 2 - Ouray Endangered Fish Facility UT

Acquire/lease 30 acres of ponds for grow out of razorback sucker to achieve numbers and sizes of fish identified in the integrated stocking plan.

Fiscal Year 2005

Task 1 - Bureau of Reclamation

Purchase PIT tags and associated equipment (i.e., needles, syringes, readers) for fish to be stocked. Bureau of Reclamation makes the purchase and has them delivered to Grand Junction for record keeping and distribution.

Task 2 - Grand Valley Endangered Fish Facility CO

Re-lease ponds for grow out of razorback sucker to achieve numbers and sizes of fish identified in the integrated stocking plan.

IX. Budget

FY 2004 Work

Task 1 - Bureau of Reclamation

Purchase PIT tags for fish to be stocked. \$ 210,000

51,000¹ PIT tags at @ \$3.75 per tag 191, 250

Associated equipment (readers, 15,750
needles, syringes)

(No overhead applied because BR makes the purchase directly)

¹ Note: extra tags are purchased to apply to wild fish caught that do not have a tag.

Task 2 - Ouray Endangered Fish Facility UT

30 acres of leased grow out ponds \$ 30,000

Total for FY 2004 \$ 240,000

FY 2005 Work

Task 1 - Bureau of Reclamation

Purchase PIT tags for fish to be stocked. \$ 210,000

51,000¹ PIT tags at @ \$3.75 per tag 191, 250

Associated equipment (readers, 15,750
needles, syringes)

(No overhead applied because BR makes the purchase directly)

¹ Note: extra tags are purchased to apply to wild fish caught that do not have a tag.

Task 2 - Grand Valley Endangered Fish Facility CO

Expired grow out pond leases that need renewal \$ 71,600

Brunet 31,500

McGuire 34,700

Morse 5,400

Task 3 - Ouray National Fish hatchery, UT

Expired grow out pond leases that need renewal \$ 100,000

(Not identified until October 2003; comments on budget table indicated there may be increase because of the need to renew pond leases)

Total for FY 2005 \$ 381,600*

* Increased from \$281,600 to \$381,600 due to need to renew pond leases at Ouray

IX. Budget Summary:

FY-2004	\$ 240,000
FY-2005	\$ 381,600
FY-2006	\$ 350,000*

*Expired grow out pond leases that need renewal: Van Wagner (\$47.4 K) and Maggio (\$82.0K).

X. References

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Hudson, J.M. 2001. State of Utah stocking plan for endangered fish species of the upper Colorado River basin. Utah Division of Wildlife Resources, Salt Lake City, Utah.

Nesler, T.P. 2001. Stocking plan for endangered Colorado River fish species in Colorado. Colorado Division of Wildlife, Denver, Colorado.

Nesler, T.P., K. Christopherson, J.M. Hudson, C.W. McAda, F. Pfeifer, and T.E. Czapla. 2003. An integrated stocking plan for razorback sucker, bonytail, and Colorado pikeminnow for the Upper Colorado River Endangered Fish Recovery Program: addendum to State stocking plans. Upper Colorado River Endangered Fish Recovery Program, Denver, Colorado.

Osmundson, D.B., and L.R. Kaeding. 1989. Colorado squawfish and razorback sucker grow-out pond studies as part of conservation measures for the Green Mountain and Ruedi Reservoir water sales. U.S. Fish and Wildlife Service, Colorado River Fishery Project, Grand Junction Colorado, 57 p.

U.S. Fish and Wildlife Service. 1987. Recovery implementation program for endangered fish species in the Upper Colorado River Basin. U.S. Department of the Interior, Fish and Wildlife Service, Region 6, Denver, Colorado. 6 Sections. Various pagination.

Williamson, J.H. and R.S. Wydoski. 1994. Genetics management guidelines. Recovery Implementation Program for Endangered Fishes in the Upper Colorado River Basin. U.S. Department of the Interior, Fish and Wildlife Service, Region 6, Denver, Colorado. 40 pp.